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LOW-FERMENTABILITY HARD CANDY

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ABSTRACT OF THE DISCLOSURE

A carbohydrate-containing base for hard candy manufacture having a composition of low-fermentable ingredients, which is adaptable for processing in standard hard candy manufacturing facilities and, when incorporated with the usual flavoring, color and sweentening additives, effects a nutritious finished hard candy product which exhibits minimal tendency to ferment when ingested.

This application is a continuation-in-part of copending patent application Ser. No. 652,425, filed July 11, 1967 and now abandoned.

BACKGROUND OF THE INVENTION

This invention relates to the manufacture of hard candies and, more particularly, is directed to the manufacture of hard candies having a low content of fermentable carbohydrate ingredients.

In contrast to the dietetic candy products of the prior art in which formulations are employed to minimize the caloric value of the sweet products, the nutritious hard candies of the instant invention contain ingredients having a caloric intensity equivalent to that of sucrose, and, as such, are especially appealable and suitable for normal children requiring a convenient, appetizing source of energy.

Heretofore, attempts to formulate hard candies with carbohydrates other than sucrose and yet having a caloric value equivalent to the available hard candies containing major proportions of sucrose have not been commercially successful. The lack of commercial acceptance of substitute ingredients for sucrose has been primarily due to the extreme difficulty in processing these materials with existing commercial equipment employed for the manufacture of such commodities. The processing techniques and commercial equipment employed for the manufacture of hard candies have been developed, designed and adapted to the physical properties of sucrose, especially with respect to the viscosity, specific heats and solidification properties of aqueous solutions of sucrose admixed with corn syrup solids under a wide range of concentrations and temperatures. Particularly, the structural design of such equipment as pumps, cooking kettles, agitators, piping, and process control instrumentation has been especially developed specifically for the processing of concentrated aqueous solutions of sucrose admixed with corn syrup solids.

Prior to the conception of the instant invention, the manufacture of hard candies wherein the sucrose and corn syrup solids have been replaced with alternate ingredients has met, for the most part, with major processing difficulties and, therefore, has understandably lacked commercial success.

Although technically feasible, hard candy manufacturers have been reluctant to sustain the excessive expense of funding the cost of designing equipment adaptable to the processing of hard candy ingredients other than sucrose and natural corn syrup solids. This reluctance on the part of the hard candy manufacturers has been especially apparent in view of the large invention of standard processing equipment installed in the present manufacturing facilities.

Accordingly, and especially in view of the fact certain ingredients particularly suitable for the manufacture of hard candies have distinct attributes in that they exhibit physiological and metabolic advantages over sucrose and natural corn syrup solids, there has existed a need to develop and compound these ingredients into formulations which essentially exhibit physical behavior similar to that of the standard sucrose-corn syrup solid materials. There has been an especial need to develop formulations which, while having the advantageous low-fermentability factor not accorded to sucrose, exhibit viscosity, specific heats, and other physical properties very similar to those of sucrose-corn syrup solid mixtures over a wide latitude of concentrations and temperatures. This tailoring of admixture substitute ingredients as replacements for sucrose as a hard candy base is essential for successful commercial processing with the existing candy manufacturing equipment.

The hard candy formulation of this invention have, to a large extent, fulfilled the increasing requirement for low-fermentable ingredients having a nutritious caloric content and being adaptable for processing in standard, hard candy manufacturing equipment.

SUMMARY OF THE INVENTION

Briefly stated, this invention resides in the discovery of specific formulations comprising an aqueous solution of a modified starch hydrolysate, lactose, and sugar alcohols which, when blended within a relatively narrow range of proportional amounts, can be successfully processed with standard hard candy equipment to advantageously yield a hard candy base for the production of hard candy products containing substantially all low-fermentable ingredients and having a nutritious caloric content equivalent to the hard candies of the prior art composed of large quantities of fermentable sucrose and natural corn syrup solids.

It is, therefore, a principal object of the invention to provide a low-fermentability carbohydrate base suitable for commercial hard candy manufacturing.

It is an object of this invention to provide a low-fermentability carbohydrate base which is compatable with the usual flavoring and coloring ingredient employed in hard candy manufacture.

It is another object of this invention to provide a low fermentability carbohydrate containing base for hard candies which is compatable with non-caloric sweeteners to effect a combination which, when employed in hard candy production, will contribute to the finished product a sweetness level equivalent to that of sucrose admixed with corn syrup solids.

It is another object of this invention to provide a low fermentability carbohydrate-containing base for hard candies which is compatable with non-caloric sweeteners to effect a combination which, when employed in hard candy production will contribute to the finished product a sweetness level equivalent to that of sucrose admixed with corn syrup solids.

It is a principal feature of this invention to provide a composition of low-fermentability carbohydrate ingredients proportioned in amounts of individual components so as to exhibit physical properties of viscosity and solidification similar to that of sucrose admixed with corn syrup solids.

It is an important feature of this invention to provide a low-fermentability carbohydrate base for hard candy products which affords the finished product with a storage stability equivalent. and, in some respects superior,